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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/051,078      | 01/22/2002  | Richard J. Carter    | 10008130-1          | 3391             |

7590 10/24/2003  
HEWLETT-PACKARD COMPANY  
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EXAMINER

WHITMORE, STACY

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2812

DATE MAILED: 10/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/051,078

Applicant(s)

CARTER, RICHARD J.

Examiner

Stacy A Whitmore

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-14 and 16-21 is/are rejected.
- 7) ☒ Claim(s) 11 and 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other:

### DETAILED ACTION

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-8, and 16-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Panchul et al. (US Patent 226,776).

2. As for claims 1 and 16, Panchul disclosed the invention substantially as claimed, including a method of converting code to a hardware realization [abstract, col. 6, lines 43-55], the method comprising steps of:

receiving user code including at least one algorithm specification [abstract, col. 6, lines 43-55], at least one data representation specification [fig.'s 3a and 3b; col. 5, lines 62-67; col. 14, line 66 – col. 15, line 18], and at least one data communication specification [fig.'s 3a and 3b; col. 5, lines 62-67; col. 14, line 66 – col. 15, line 18]; and

compiling the user code, wherein the user code is used to create a digital circuit [col. 6, lines 45-66].

Note: the examiner's broadest interpretation of the data representation is "The data representation specifications allow a user to choose how a variable is represented" from pg. 9, lines 20-21 of the applicant's specification. The examiner's broadest

Art Unit: 2812

interpretation of a data communication specification is "The data communication specifications allow a user to select for each variable in the algorithm a data communication implementation. The data communication specification provides the technique for connecting hardware in the hardware realization and may include conventional connection techniques" from page 10, lines 1-4 of the applicant's specification.

3. As for claim 2 and 18, Panchul disclosed compiling the user code to generate a netlist [col. 24, lines 55-57]; and mapping the netlist using physical design tools for creating a digital circuit [col. 24, lines 55-58; col. 28, lines 38-33; the HDL netlist is used to implement the actual physical design and therefore must be mapped to the physical design].
4. As for claim 3 and 19, Panchul disclosed creating the digital circuit based on the user code [col. 6, lines 52-60].
5. As for claim 4, Panchul disclosed creating configuration data []; and subsequently configuring an FPGA [col. 13, line 64 – col. 14, line 6].
6. As for claim 5, Panchul disclosed creating a specification for one of a custom-designed VLSI chip and a standard cell VLSI chip [col. 1].
7. As for claim 6 and 17, Panchul disclosed retrieving information from libraries, the information being associated with the at least one algorithm specification, at least one data representation specification, and at least one data communication specification [see as cited in the rejection of claim 1, and also col. 26, lines 48-50].
8. As for claim 7, Panchul disclosed wherein the at least one algorithm specification includes at least one variable having a defined set of values not varying by platform and at least one operator having a function not varying by platform [col. 27, lines 21-28].

9. As for claim 8, Panchul disclosed wherein the at least one data representation specification includes one of 2's-compliment, signed-digit, and fully-redundant carry-save for each variable in the at least one algorithm specification [col. 5, lines 62-67, reads as signed-digit].

#### Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Panchul (US Patent 6,226,776) in view of Davis (US Patent 6,230,307).

11. As for claim 9, Panchul disclosed the invention substantially as claimed, including the method of converting code to a hardware realization as cited in the rejection of claim 1 above.

Panchul did not specifically disclose wherein the at least one data communication specification includes one of bit-serial, digital serial and fully-parallel for each variable in the at least one algorithm specification.

Art Unit: 2812

Davis disclosed a data communication specification that includes one of bit-serial, digital serial and fully-parallel for each variable in the at least one algorithm specification [col. 13, lines 16-23].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the disclosures of Panchul and Davis because Panchul and Davis both disclose design of FPGAs and having a bit serial specification for Panchul would provide for one of a plurality of different data communication types that may be used for FPGAs, thereby providing Panchul with the ability to represent different types of FPGAs in the design process.

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Panchul (US Patent 6,226,776) in view of Kodosky (US Patent 6,584,601).

13. As for claim 10, Panchul disclosed the invention substantially as claimed, including receiving selections of the at least one algorithm specification, at least one data representation specification, and at least one data communication specification [see as cited in the rejection of claim 1]

Panchul did not specifically disclose the selections are received from a graphical user interface (GUI).

Kodosky disclosed the selection of the algorithm specification [as cited by the examiner in claim 1, includes both the data representation and communication specifications] from a GUI [abstract; col. 46, lines 11-27].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Panchul and Kodosky because adding the ability of Kodosky's system to receive selection from a GUI because receiving selections from

Art Unit: 2812

a GUI would have provided a fast and easy way for a designer to select design parameters and specifications, thereby improving the design environment of the hardware realization.

14. Claims 12-14, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Panchul (US Patent 6,226,776) in view of Kim (US Patent 6,513,644).

15. As for claim 12, Panchul disclosed, a method of converting code to a hardware realization [abstract, col. 6, lines 43-55], the method comprising steps of:

receiving user code [abstract, col. 6, lines 43-55];

identifying variables used in an operation in the user code, the operation including at least one operator [fig.'s 3a and 3b; col. 5, lines 62-67; col. 14, line 66 – col. 15, line 18];and

compiling the user code, wherein the user code is used to create a digital circuit [col. 6, lines 45-66].

16. As for claim 13, Panchul disclosed wherein the user code further includes at least one algorithm specification, at least one data representation specification, and at least one data communication specification [see as cited in the rejection of claim 1].

17. As for claim 14, Panchul disclosed the at least one data representation specification includes one of 2's-compliment, signed-digit, and fully-redundant carry-save for each variable in the at least one algorithm specification [see as cited in the rejection of claim 8].

Panchul did not specifically disclose identifying a set of assumable variable for each of the identified variables; and calculating a set of assumable values for other variables holding the results of the operation based on the identified set of assumable value.

Kim disclosed identifying a set of assumable variable for each of the identified variables; and calculating a set of assumable values for other variables holding the results of the operation based on the identified set of assumable value [col. 3, lines 50-52, col. 11, lines 19-23].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Panchul and Kim because Kim's identifying and calculating a set of assumable variables as disclosed by Kim would have improved Panchul's system by providing defined ranges for variables in Panchul's algorithm specification which would give designer control over the design parameters and specifications of the circuit representations.

18. As for claims 20-21, Panchul disclosed the invention substantially as claimed, including the system for creating a digital circuit as cited in the rejections of claims 1 and 16 above.

Panchul did not specifically disclose identifying a set of assumable variable for each of the identified variables; and calculating a set of assumable values for other variables holding the results of the operation based on the identified set of assumable value [col. 3, lines 50-52, col. 11, lines 19-23].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Panchul and Kim because Kim's identifying and calculating a set of assumable variables as disclosed by Kim would have improved Panchul's system by providing defined ranges for variables in Panchul's algorithm specification which would give designer control over the design parameters and specifications of the circuit representations.



Art Unit: 2812

19. Claims 11 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

20. The following is a statement of reasons for the indication of allowable subject matter: As for claims 11 and 15, the prior art of record fails to disclose either singularly or in combination wherein the at least one algorithm specification, at least one data representation specification, and at least one data communication specification are independent and each of these specifications are modifiable without affecting the others. Further, applicant's specification discloses the importance of the independence of the specification which are modifiable without affecting the others on page 6, lines 10-15, showing that the algorithm specification does not need to be recoded due the the independence of the data specifications as claimed.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy A Whitmore whose telephone number is (703) 305-0565. The examiner can normally be reached on Monday-Thursday, alternate Friday 6:30am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Stacy A Whitmore

Patent Examiner

Art Unit 2812



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